In the United States Patent and Trademark Office

#19/Response Hawkins 7-16-02

Applicant	Eddie Sines
Application No.	09/364,256
Filed	July 30, 1999
Title	ELECTRICAL POWER DEVICES COOLING TECHNIQUE
Group/Art Unit	2834
Examiner	Guillermo Perez
Docket No.	NC 79,955

July 8, 2002

RESPONSE TO OFFICE ACTION
WITH
REQUEST FOR CONTINUING EXAMINATION UNDER RULE 1.114

Box RCE
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

In connection with the above-identified application, applicant authorizes charging the $400.00 fee for a 2-month extension of time to Deposit Account No.50-0281, thereby extending the period for response from May 8, 2002 to July 8, 2002.

Applicant requests that the application be examined pursuant to Rule 1.114 as a Request for Continued Examination (RCE). Please charge the applicable fee(s) to Deposit Account No.50-0281.

In response to the Office Action of February 8, 2002, applicant submits the following remarks:

REMARKS

Claims 18-22 remain in this case. No new claims have been added. No new matter has been added and no additional fees are due for the claims. The pending claims are under final rejection.

The Examiner has rejected claims 19 and 21 as being unpatentable under USC 103(a) based on Kanai in view of Fitter. Applicant respectfully traverses this rejection. There is no teaching in either reference that would suggest combining them. But even if the references were combined, the combination would not yield the present application. The Examiner relies upon the teachings of Kanai to show that heat dissipation plates have two ends projecting from the peripheral surface of the field winding and that both ends act to disperse heat. However, a closer reading of the Kanai reference shows that this is not the case. Figure 1 of the Kanai reference clearly illustrates only one end of the heat dissipation plate extending beyond the peripheral surface of the field winding. The Abstract confirms this teaching with the statement that only "a part" (i.e. one end) of the heat dissipation plate projects beyond the outer peripheral surface of the field winding. In addition, the Examiner states in Paragraph 2 of the Office Action that Kanai does not disclose "that the first and second ends of the thermally conductive strip extend outside the core". It is therefore evident that Kanai teaches only one end – not two ends -- of the heat dissipation plates projecting beyond the core to dissipate heat. The Examiner further relies upon the teachings of Fitter to show thermally conductive strips of a non-metallic material. However, Fitter actually discloses heat dissipation elements that are "non-magnetic, and may be a metal having good thermal conductivity, such as copper or aluminum." (col. 2, lines 24-27). Thus, Fitter actually teaches the use of non-magnetic, rather than non-metallic, materials. Furthermore, the terms "non-magnetic" and "non-metallic" are not synonymous since Fitter specifies a "non-magnetic" material and then states that a thermally conducting metal may be used. The combination of Kanai and Fitter therefore does not teach non-metallic heat dissipation elements

having two ends extending beyond the core to dissipate heat nor render the claimed invention obvious.

The Examiner has rejected claim 20 as being unpatentable under USC 103(a) based on Kanai in view of Fitter and further in view of Herron. Applicant respectfully traverses this rejection. There is no teaching or suggestion in either of the references to so combine the references. However, even if the references were combined, this combination would not produce the claimed invention. The Examiner concedes that Kanai and Fitter do not disclose the steps of placing thermally conductive strips between predetermined laminations of the core or that the first and second ends of the thermally conductive strips extend outside the core. The Examiner then states that Herron discloses thermally conductive strips with two ends extending outside the core to improve cooling efficiency. However, a closer review of Herron reveals that this is not the case. Instead, the cooling steps of Herron disclose aluminum (or non-magnetic) lumina that provide structural integrity and perform two primary functions: that of mounting the magnets and that of mounting the discontinuous magnetic-metal lumina relative to the magnets to provide an air gap and low reluctance flux path (col. 1, lines 34-44). Herron further discloses that the air gaps or voids operate to facilitate the cooling process by using positive pressure and evacuation across the air gaps to cool the structure (col.3, lines 39-46; col. 3, lines 59-64; col.4, lines 53-57). Thus, according to Herron, cooling is effected by means of voids or air gaps in the center of the non-magnetic lumina (or thermally conductive elements), thereby removing the heat by means of the interior section of the lumina and not from two ends of the lumina. With respect to Fitter, this reference teaches heat dissipation elements that are separated by air gaps to promote cooling. The combination of Herron with Kanai and Fitter therefore merely teaches an apparatus having one-ended heat dissipation elements extending outside the core with air gaps in the interior section of the heat dissipation elements and between the heat dissipation elements to effect cooling. The combination of Kanai, Fitter, and Herron therefore does not render the present invention obvious.

The Examiner has rejected claims 18 and 22 under USC 103(a) as being unpatentable over Herron in view of Herr et al. and further over Kanai in view of Jarczynski. Applicant respectfully traverses this rejection. There is no teaching or suggestion in either reference that would suggest combining them. However, the combination of these references would not result in the present invention. According to the Examiner, Herron discloses "laminations of a metallic material (11) forming an outer casing of the electric motor" and "circular, flat, thermally conductive disks (12,13) positioned between the laminations (11) for conducting heat", while Herr et al. discloses "non-metallic materials or metallic materials can be interchangeably used to build the stator (column 5, lines 11-19) for the purpose of improving the cooling performance in the stator structure". However, both of these references are directed to cooling systems that require air gaps within the interior of the motor to disperse heat. Herron provides that its laminations define voids or chambers within the core, such that positive pressure and evacuation of the voids or air gaps cause a flow of air across the voids or air gaps for cooling (column 3, lines 31-45). Herr et al. is also directed to a cooling system that uses air gaps within the motor casing to disperse heat. A stirring fan (40) can also be used to stir the air in the air spaces within the sleeve (10). Heat transfer elements (34) are parallel to and spaced apart from the armature (column 4, lines 58-67). These heat transfer elements can be non-magnetic or ceramic (column 5, lines 11-19). However, ceramic materials have not proven to be an effective heat transferring material and are therefore not widely used.

The Examiner further states that Kanai discloses a wound electrically conductive material having thermally conductive strips (extending outside the conductive material) placed between preselected layers of the electrically conductive material and that Jarcynzski discloses thermocoolers "adjacent to and touching the outer casing of the motor". However, Kanai does not teach or suggest using heat dissipation strips in combination with the Herron and Herr et al. air flow cooling systems which require air gaps inside the core. Also, although Jarcynzski teaches a thermal collector (or thermocooler) surrounding the core and connected to the core

laminations, the thermal collector contains fluid-filled passageways to remove heat from the core (column 6, lines 25-33). This is in contrast to the present invention, wherein a thermally conducting potting compound (22) surrounds the metallic laminations and the ends of the non-metallic thermally conductive strips to transfer heat away from these elements (page 6, lines 18-20). Fluid and fluid passageways are not required for heat removal in the present invention where the use of a thermocooler is optional but can be used, if additional cooling is desired, by applying it to the outside of the transformer (page 9, lines 11-14). In this respect, the present invention is significantly distinguished over the teachings of Jarczynzski wherein a thermocooler is required for heat removal. It is therefore apparent that a combination of Herron, Herr et al., Kanai and Jarczynzski does not render the present invention obvious.

Aside from the fact that all the cited references pertain to some type of cooling method, there is no teaching or suggestion to combine these references. In fact, the Herr et al., Herron, and Fitter references are limited to the use of air spaces to obtain a cooling effect, while the cooling method taught by Jarczynski is limited to a fluid filled cooling element. The teachings of these references regarding their cooling methods therefore make it impossible to combine either of these references with the teachings of Kanai to produce the present invention. To combine prior art references absent any teaching or suggestion therein constitutes an impermissible "hindsight" rejection since the courts have clearly held that more is required than the use of applicant's own disclosure as a blueprint for piecing together the prior art to defeat patentability. See *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

The Examiner states that it would be obvious to one skilled in the art to make the thermally conductive strips of a non-metallic material based upon its suitability for the intended use as a matter of obvious design choice, citing In re Leshin, 125 USPQ 416. Leshin, however, involved the use of molded plastic for a similar container where the applicant conceded that the plastics he used were well-known (see Leshin at page 417). That is not the case here. Fitter, Herr et al. and Herron teach that either non-magnetic, metallic, or ceramic material may be used but

the use of the suggested material is limited to a cooling apparatus that requires air gaps and an interior air flow to effect removal of heat. This is vastly different from the present invention which does not require air gaps with an air flow through the gaps to effect cooling.

Applicant respectfully requests reconsideration of the rejection of the claims and that the claims now be allowed.

The Examiner is also invited to contact applicants' attorney at the number indicated below if further discussion related to any of the items included within this response will help advance the case to allowance.

Kindly charge any additional fee, or credit any over-payment, to Deposit Account No.50-0281.

Respectfully submitted,

John J. Karasek
Reg. No. 36,182
Attorney for Applicants

Reg. No. 34,217

Response Due (with 2 month
Extension of time): July 8, 2002
Prepared by: Dorothy I. Becker
Reg. No. 27,419
Telephone No. 202-767-0302
Fax No. 202-404-7380